

PRODUCT: IRFN 9240SMD

ISSUE: 3

PAGE 1 OF 3

TYPE:

P CHANNEL FET

PACKAGES:

SMD1

DESIGNATION	BY	DATE
ORIGINATED	DAVID DONEGANI	17/07/00
DATASHEET ENTERED	CAROL SILVEY	17/07/00
PROOFED		
ISSUED		

MAIN FILENAME

PATH & FILENAME: C:\APPROVED\DTASHEET\SML GEN\FETS\lirfn9240smd.QXD

AUXILIARY FILES

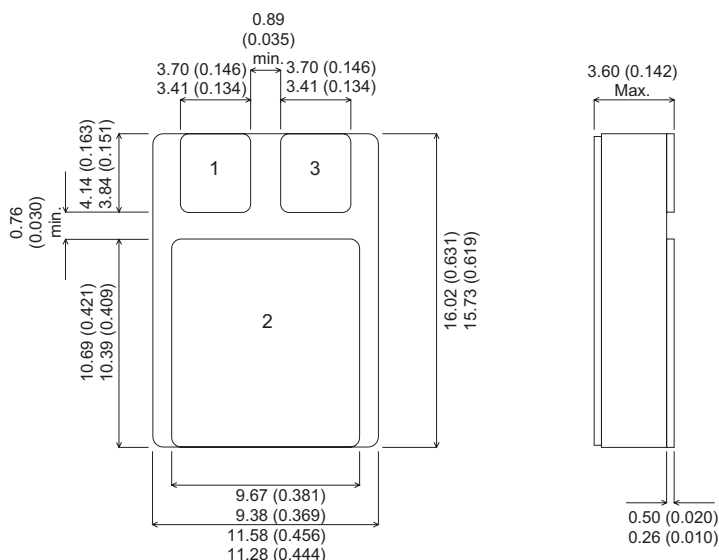
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REVISIONS

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MECHANICAL DATA

Dimensions in mm (inches)



P-CHANNEL POWER MOSFET

V_{DSS}	-200V
$I_{D(cont)}$	-8A
$R_{DS(on)}$	0.051 Ω

FEATURES

- HERMETICALLY SEALED SURFACE MOUNT PACKAGE
- SMALL FOOTPRINT – EFFICIENT USE OF PCB SPACE.
- SIMPLE DRIVE REQUIREMENTS
- LIGHTWEIGHT
- HIGH PACKING DENSITIES

SMD1 PACKAGE

Pad 1 – Source Pad 2 – Drain Pad 3 – Gate

Note: IRFxxxSM also available with pins 1 and 3 reversed.

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

V_{GS}	Gate – Source Voltage	$\pm 20V$
I_D	Continuous Drain Current ($V_{GS} = 0$, $T_{case} = 25^{\circ}C$)	-8.0A
I_D	Continuous Drain Current ($V_{GS} = 0$, $T_{case} = 100^{\circ}C$)	-5.0A
I_{DM}	Pulsed Drain Current ¹	-32A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	75W
	Linear Derating Factor	0.6W/ $^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy ²	500mJ
dv/dt	Peak Diode Recovery ³	-5.5V/ns
T_J , T_{stg}	Operating and Storage Temperature Range	-55 to 150 $^{\circ}C$
T_L	Package Mounting Surface Temperature (for 5 sec)	300 $^{\circ}C$
$R_{\theta JC}$	Thermal Resistance Junction to Case	1.67 $^{\circ}C/W$
$R_{\theta J-PCB}$	Thermal Resistance Junction to PCB (Typical)	4 $^{\circ}C/W$

Notes

- 1) Pulse Test: Pulse Width $\leq 300ms$, $\delta \leq 2\%$
- 2) @ $V_{DD} = -50V$, $L \geq 11.7mH$, $R_G = 25\Omega$, Peak $I_L = -8A$, Starting $T_J = 25^{\circ}C$
- 3) @ $I_{SD} \leq -8A$, $di/dt \leq -150A/\mu s$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^{\circ}C$, SUGGESTED $R_G = 9.1\Omega$

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Prelim. 7/00

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS							
BV _{DSS}	Drain – Source Breakdown Voltage	V _{GS} = 0	I _D = –1mA	–200			V
ΔBV _{DSS} ΔT _J	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I _D = –1mA			–0.020		V/°C
R _{DS(on)}	Static Drain – Source On–State Resistance ¹	V _{GS} = –10V	I _D = –5A			0.51	Ω
		V _{GS} = –10V	I _D = –8A			0.52	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS}	I _D = –250μA	–2		–4	V
g _{fs}	Forward Transconductance ¹	V _{DS} ≥ –15V	I _{DS} = –5A	4.0			S(Ω)
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} = 0	V _{DS} = 0.8BV _{DSS}			–25	μA
			T _J = 125°C			–250	
I _{GSS}	Forward Gate – Source Leakage	V _{GS} = –20V				–100	nA
I _{GSS}	Reverse Gate – Source Leakage	V _{GS} = 20V				100	
DYNAMIC CHARACTERISTICS							
C _{iss}	Input Capacitance	V _{GS} = 0 V _{DS} = –25V f = 1MHz			1200		pF
C _{oss}	Output Capacitance				570		
C _{rss}	Reverse Transfer Capacitance				81		
Q _g	Total Gate Charge ¹	V _{GS} = –10V I _D = –8A V _{DS} = 0.5BV _{DSS}		28		60	nC
Q _{gs}	Gate – Source Charge ¹	I _D = –8A V _{DS} = 0.5BV _{DSS}		3.0		15	nC
Q _{gd}	Gate – Drain (“Miller”) Charge ¹			4.5		38	
t _{d(on)}	Turn–On Delay Time	V _{DD} = –100V I _D = –8A R _G = 9.1Ω				35	ns
t _r	Rise Time					85	
t _{d(off)}	Turn–Off Delay Time					85	
t _f	Fall Time					65	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I _S	Continuous Source Current					–8	A
I _{SM}	Pulse Source Current ²					–32	
V _{SD}	Diode Forward Voltage	I _S = –8A V _{GS} = 0	T _J = 25°C			–4.6	V
t _{rr}	Reverse Recovery Time	I _F = –8A	T _J = 25°C			440	ns
Q _{rr}	Reverse Recovery Charge	d _i / d _t ≤ –100A/μs V _{DD} ≤ –50V				7.2	μC
t _{on}	Forward Turn–On Time			negligible			
PACKAGE CHARACTERISTICS							
L _D	Internal Drain Inductance (from centre of drain pad to die)				0.8		nH
L _S	Internal Source Inductance (from centre of source pad to end of source bond wire)				2.8		

Notes

- 1) Pulse Test: Pulse Width $\leq 300\text{ms}$, $\delta \leq 2\%$
- 2) Repetitive Rating – Pulse width limited by maximum junction temperature.